What is claimed is:

1   1. A method of resampling an image, comprising:

2   estimating input image statistics from input pixel values;

3   substituting the input image statistics for unknown output image statistics;

4   determining an optimum set of filter tap weights; and

5   calculating output pixel values.

1   2.   The method of claim 1, wherein the image statistics comprise an auto-correlation

2   matrix and a covariance vector.

1   3.   The method of claim 2, wherein the step of estimating input image statistics

2   further comprises:

3   calculating second order moments for the auto-correlation matrix and the

4   covariance vector from pixel values in an input context; and

5   computing the auto-correlation matrix and the covariance vector using the second

6   order moments and a transpose operator.

1   4.   The method of claim 2, wherein the step of determining an optimum set of filter

2   tap weights further comprises computing the product of the covariance vector and the

3   inverse of the auto-correlation matrix.

1   5.   The method of claim 2, wherein the step of calculating output pixel values further

2   comprises computing the product of the set of filter tap weights and input pixel values,

3   for pixel values in the input context.

1   6.   A method of resampling an image, comprising:

2   estimating an auto-correlation matrix and a covariance vector from input pixel

3   values, the estimation comprising:

4   calculating second order moments for the auto-correlation matrix and the

5   covariance vector from pixel values in an input context; and

6   computing the auto-correlation matrix and the covariance vector using the

7   second order moments and a transpose operator;

8   substituting input image statistics for unknown output image statistics;

9   calculating an optimum set of filter tap weights as the product of the covariance

10   vector and the inverse of the auto-correlation matrix; and

11   calculating output pixel values as the product of the set of filter tap weights and input

12   pixel values for pixel values in the input context.

1   7.   A system for resampling an image, comprising:

2   a software portion configured to estimate input image statistics from input pixel

3   values;

4   a software portion configured to substitute the input image statistics for unknown

5   output image statistics;

6   a software portion configured to calculate an optimum set of filter tap weights;

7   and

8   a software portion configured to calculate output pixel values.

1   8.   The system of claim 7, wherein the image statistics comprise an auto-correlation

2   matrix and a covariance vector.

1   9.   The system of claim 8, wherein the software portion configured to estimate input

2   image statistics is further configured to:

1   calculate second order moments for the auto-correlation matrix and the covariance

2   vector from pixel values in an input context; and

3   calculate the auto-correlation matrix and the covariance vector using the second

4   order moments and a transpose operator.

1   10.   The system of claim 8, wherein software portion configured to calculate an

2 optimum set of filter tap weights is further configured to calculate the product of the

3 covariance vector and the inverse of the auto-correlation matrix.

1   11.   The system of claim 8, wherein the software portion configured to calculate

2 output pixel values is further configured to calculate the product of the set of filter tap

3 weights and input pixel values, for pixel values in the input context.

1   12.   A system for resampling an image, comprising:

2   a software portion configured to calculate an auto-correlation matrix and a

3   covariance vector using second order moments for the auto-correlation

4   matrix and the covariance vector from pixel values in an input context and

5   a transpose operator;

6   a software portion configured to substitute the input image statistics for unknown

7   output image statistics;

8   a software portion configured to calculate an optimum set of filter tap weights as

9   the product of the covariance vector and the inverse of the auto-correlation

10   matrix; and

11   a software portion configured to calculate output pixel values as the product of the

12   set of filter tap weights and input pixel values for pixel values in the input

13   context.

1   13.   A computer program product for resampling an image, comprising:

2   a software portion configured to estimate input image statistics from input pixel

3   values;

4   a software portion configured to substitute the input image statistics for unknown

5   output image statistics;

6   a software portion configured to calculate an optimum set of filter tap weights;

7   and

8   a software portion configured to calculate output pixel values.

1   14.   The computer program product of claim 13, wherein the image statistics comprise

2   an auto-correlation matrix and a covariance vector.

1   15.   The computer program product of claim 14, wherein the software portion

2   configured to estimate input image statistics is further configured to:

1   calculate second order moments for the auto-correlation matrix and the covariance

2   vector from pixel values in an input context; and

3   calculate the auto-correlation matrix and the covariance vector using the second

4   order moments and a transpose operator.

1   16.   The computer program product of claim 14, wherein software portion configured

2   to calculate an optimum set of filter tap weights is further configured to calculate the

3   product of the covariance vector and the inverse of the auto-correlation matrix.

1   17.   The computer program product of claim 14, wherein the software portion

2   configured to calculate output pixel values is further configured to calculate the product

3   of the set of filter tap weights and input pixel values, for pixel values in the input context.

1   18.   A computer program product for resampling an image, comprising:

2   a software portion configured to calculate an auto-correlation matrix and a

3   covariance vector using second order moments for the auto-correlation

4   matrix and the covariance vector from pixel values in an input context and

5   a transpose operator;

6   a software portion configured to substitute the input image statistics for unknown

7   output image statistics;

8   a software portion configured to calculate an optimum set of filter tap weights as

9   the product of the covariance vector and the inverse of the auto-correlation

10   matrix; and

11   a software portion configured to calculate output pixel values as the product of the

12   set of filter tap weights and input pixel values for pixel values in the input

13   context.

1 19. A system for resampling an image, comprising:

2   means for estimating input image statistics from input pixel values;

3   means for substituting the input image statistics for unknown output image

4   statistics;

5   means for determining an optimum set of filter tap weights; and

6   means for calculating output pixel values.

1 20. The system of claim 19, wherein the image statistics comprise an auto-correlation

2 matrix and a covariance vector.

1 21. The system of claim 20, wherein the means for estimating input image statistics

2 further comprises:

3   means for calculating second order moments for the auto-correlation matrix and

4   the covariance vector from pixel values in an input context; and

5   means for computing the auto-correlation matrix and the covariance vector using

6   the second order moments and a transpose operator.

1   22.   The system of claim 20, wherein the means for determining an optimum set of

2   filter tap weights further comprises computing the product of the covariance vector and

3   the inverse of the auto-correlation matrix.

1   23.   The method of claim 20, wherein the means for calculating output pixel values

2   further comprises computing the product of the set of filter tap weights and input pixel

3   values, for pixel values in the input context.

1   24.   A system for resampling an image, comprising:

2   means for estimating an auto-correlation matrix and a covariance vector from

3   input pixel values, the estimation comprising:

4   means for calculating second order moments for the auto-correlation

5   matrix and the covariance vector from pixel values in an input

6   context; and

7   means for computing the auto-correlation matrix and the covariance vector

8   using the second order moments and a transpose operator;

9   means for substituting input image statistics for unknown output image statistics;

10   means for calculating an optimum set of filter tap weights as the product of the

11   covariance vector and the inverse of the auto-correlation matrix; and

12   means for calculating output pixel values as the product of the set of filter tap

13   weights and input pixel values for pixel values in the input context.